

Original Article

Return to Work after an Acute Coronary Syndrome: Patients' Perspective

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Objectives: To describe the time perspective of return to work and the factors that facilitate and hinder return to work in a group of survivors of acute coronary syndrome (ACS).

Methods: Retrospective semi-structured telephone survey 2 to 3 years after hospitalization with 84 employed Dutch ACS-patients from one academic medical hospital.

Results: Fifty-eight percent of patients returned to work within 3 months, whereas at least 88% returned to work once within 2 years. Two years after hospitalization, 12% of ACS patients had not returned to work at all, and 24% were working, but not at pre-ACS levels. For all ACS-patients, the most mentioned categories of facilitating factors to return to work were having no complaints and not having signs or symptoms of heart disease. Physical incapacity, co-morbidity, and mental incapacity were the top 3 categories of hindering factors against returning to work.

Conclusion: Within 2 years, 36% of the patients had not returned to work at their pre-ACS levels. Disease factors, functional capacity, environmental factors, and personal factors were listed as affecting subjects' work ability level.

Key Words: Acute coronary syndrome, Return to work, Facilitating, Hindering factors

Introduction

Care [1,2] for acute coronary syndrome (ACS) patients has improved in the last decade [3], and many patients who develop ACS are of working age [4]. Therefore, the ability to return to work is an important issue [5-7], which should be fully incorporated into clinical practice, but is not as yet [8]. Knowledge of factors that might facilitate the return to work process aids in promoting effective communication between physicians and

ACS patients. Factors assessed during hospitalization, such as age [9-13], illness perception [14], history of heart failure [10,12], physical complaints [15], doctors' advice [8], depressed mood [16], anxiety [10], co-morbidity [12], financial situation [10], and work demands [10,12,15], seem to be predictive of a patient's work status one year after discharge from the hospital. The patients' views concerning returning to work are not elucidated in the mentioned studies [17]. Therefore, to reveal the perspectives of ACS patients in regard to returning to work, we formulated the following research questions:

- (i) What percentage of ACS patients return to work part-time or at pre-ACS levels, and what is the time frame of their return after discharge from the hospital?
- (ii) What factors do ACS patients perceive as facilitating or hindering their return to work in the short- and long-term after discharge from the hospital?

Received: December 12, 2011, **Revised:** February 28, 2012

Accepted: February 28, 2012, **Available online:** June 8, 2012

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Materials and Methods

To answer the 2 research questions, a retrospective telephone survey was performed with ACS patients who were admitted to the Academic Medical Center in Amsterdam, the Netherlands. The survey was performed between November 2007 and February 2008 and ethical approval was not necessary according to the ethical committee of our hospital because the study concerned a survey.

Sampling of participants

Admission records of the Cardiac Care Unit (CCU) were used to recruit patients for the survey. Patients were listed consecutively and were selected if they were living in the Amsterdam area. The patient's name, address, age, gender, heart disease history, possible interventions during hospitalization, and comorbidity were recorded from individual discharge records. Inclusion criteria included the following: (1) age between 18 and 63 years old on admission, (2) admission between the first of October 2004 and the first of April 2006, (3) diagnosed with ACS, and (4) engaged in paid work before the ACS. ACS was assumed when the discharge diagnosis was ST-segment-elevation-myocardial-infarction (STEMI), non-STEMI (NSTEMI) and Unstable-Angina (UA).

All patients who had given permission at discharge and were still alive according to the Dutch register of Births, Deaths, and Marriages were contacted. Patients who were engaged in paid employment before they developed ACS, regardless of the number of working hours per week, were selected for the telephone survey.

The survey

A verbal questionnaire was developed and used during the interviews by the first author (FS), who is an experienced interviewer. The survey consisted of the following items: (1) the nature of the work patients performed before and after admission for ACS, (2) the date of return to work, (3) the number of working hours before and after ACS, and (4) the factors perceived as facilitating or hindering their return to work.

Analysis

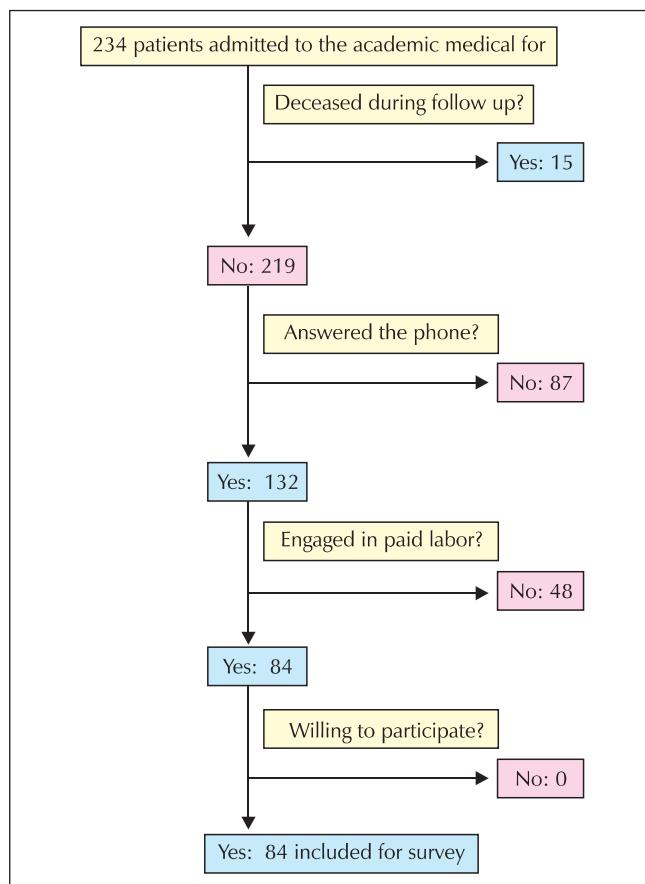
Data of the survey were entered in SPSS 16.0 (SPSS Inc., Chicago, IL, USA). The demographics were calculated, as were the percentages of partial and full return to work for 3, 6, 9, and 24 months after discharge from the CCU. The number of months after a patient's first return to work, independent of working hours, was plotted in a Kaplan-Meier curve. The Discussion took place between authors (FS, PK, JS, MF), regarding the

categorization of the patients' view on factors facilitating and hindering return to work in both the short-term (3 months) and the long-term (24 months) after hospital discharge. First, the authors captured the answers on the open ended questions in categorization terms. Discussion took place until authors could agree with the categorization term in which a given reason should be categorized according to the International Categories of Functioning Disabilities and Health [18].

Results

As can be seen in Box 1, a total of 234 patients were identified on the admission records of the CCU. After checking the register of Births, Deaths, and Marriages, 15 patients were found to have died. Of the remaining 219 patients, 132 (60%) were contacted by telephone within the study period. Patients were called a minimum of 7 times on different days and at different times before being classified as non-responders. Many of those who could not be contacted had changed from their prior telephone provider. Of those who could be reached, 84 (64%)

Box 1. Flow chart of inclusion of participants



had engaged in paid work before hospital admission for ACS and were, therefore, eligible for the study. All of these patients were informed about the study and agreed to participate in this study.

The mean age of the 84 participants was 55 years (standard deviation is 8, range 26-64), and 75 (89%) were male. Twenty patients (24%) had a history of previous cardiac events. The discharge diagnosis was STEMI in 51 patients (61%) and NSTEMI/UA in 29 patients (35%).

Because, investigators did not know if those who could not reach by telephone would agree to participate, participants could not be compared with all patients that could be enrolled in the study.

Four discharge letters were not clear enough to distinct the difference between STEMI and NSTEMI/UA. Sixty-nine patients (82%) underwent a percutaneous coronary intervention (PCI) during the initial hospitalization.

Return to work

Forty-nine patients (58%) returned to work within 3 months. By 6 months, 54 (64%) patients had returned to work. These numbers increased to 71 (85%) at 9 months and 74 (88%) at 24 months. The percentage of patients who had returned to work, regardless of the amount of working hours, are illustrated in a Kaplan-Meier curve (Fig. 1).

Even within a few days after discharge from the hospital, some patients returned to their pre-ACS work.

Almost all (93%) NSTEMI returned to work and 87% STEMI returned to work. Ninety percent of NSTEMI returned to work at pre-ACS level and 66% of STEMI returned to work at pre-ACS level.

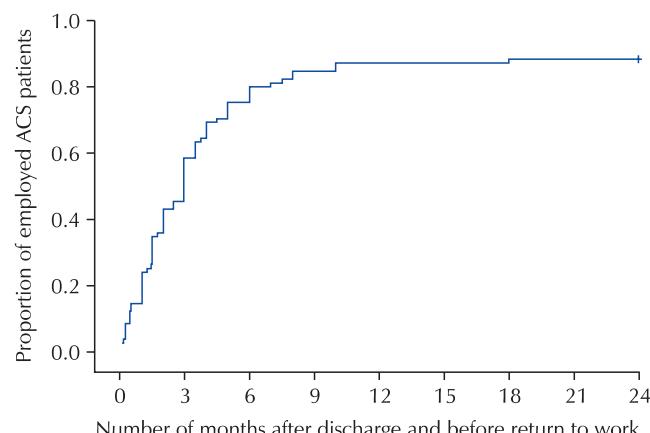


Fig. 1. The proportion of employed acute coronary syndrome (ACS) patients (n=84) and number of months before the patients returned to work after discharge from the hospital.

Return to work to pre-ACS working hours

At 3, 6, 9, and 24 months, 21 (25%), 37 (44%), 45 (54%), and 54 (64%) patients, respectively, had returned to work at their full pre-ACS working hours. Of the 30 patients (36%) who had not returned to pre-ACS working hours within 24 months after discharge from the hospital, 10 patients (12%) did not return to work at all.

Factors facilitating the return to work

The facilitating factors associated with returning to work within 3 months are presented in Table 1. In the first column, the answer categories are given, and examples of answers are given in the second column. Not having complaints of heart disease and feeling good were the most commonly mentioned reasons for return to work within three months. "Information regarding the return to work given by doctors" was mentioned once. Factors within the work environment, such as "nice fellow workers" and "work adjustments", were mentioned just 3 times.

Factors (n=45) facilitating the return to work within three months after discharge from the hospital reported by the total group of 84 patients (not all patients reported facilitating factors). Table listed in order of frequency of the reasons given.

Hindering factors for returning to work

The factors hindering return to work within 3 months of being discharged from the hospital are presented in Table 2.

Factors (n=77) hindering the return to work, independent

Table 1. Facilitating factors

Categorisation terms (number of times categorised)	Examples of facilitating reasons
Signs or symptoms of disease (36)	"No heart complaints anymore" "Felt good" "Nothing did hurt"
Work content (2)	"Work adjustment" "Heavy work"
Relationships at work (1)	"Nice fellow workers"
The ability to participate (1)	"Was able to do everything"
Functioning of medical care (1)	"The information given by the doctor"
Treatment because of disease (1)	"Good treatment"
Family relationships (1)	"The stress at home diminished"
Financial situation (1)	"Could not afford not working"
Motivation (1)	"Was motivated"

Table 2. Hindering factors within three months

Factor categories (number of times mentioned)	Examples
Physical capacity (19)	"Tiredness"
Co-morbidity (13)	"Diabetes" "Low back pain"
Mental capacity (8)	"Concentration problems"
Terms of employment (6)	"Was sacked after returning to work"
Motivation (5)	"Was not enthusiastic to work anymore" "There was no urge to work"
Side effects of medication (5)	"Dizziness because of medication"
Social security (5)	"The rules made it possible to retire"
Signs or symptoms of disease (5)	"Still heart complaints"
Treatment because of disease (5)	"Rehabilitation program" "Waiting for percutaneous coronary intervention"
Work content (2)	"Too high physical work demands" "Too high psychological work demands"
Relationships at work (2)	"Problems with the boss"
Self confidence (1)	"Felt insecure when working"
Course of disease (1)	"Was frequently ill"

of working hours, within three months after hospital discharge in order of frequency of reasons given, reported by the total group of 84 patients. Table 2 shows that physical and mental incapacity, the existence of co-morbidities, unfavourable terms of employment, and motivational problems were frequently mentioned reasons that hindered return to work after discharge. Age was mentioned once as a hindrance.

Table 3 presents the factors hindering a return to work or a return to pre-ACS working levels within 24 months of being discharged from the hospital. In the first column, the answer categories are given. The second column contains examples of answers. We found that a wide diversity of hindering factors were given for no return to work or no return to work at pre-ACS working hours.

Reasons ($n=55$) given for not restarting or not returning to the previous job full time 24 months after discharge from the hospital. The data are based on 30 patients and are presented in the order of response frequency.

Terms of employment, social security, physical capacity, and co-morbidity were the most frequently cited categories for

Table 3. Reasons given for not restarting or not returning to work

Response category (number of times given)	Examples
Physical capacity (8)	"Was too tired"
Co-morbidity (8)	"Carcinoma" "Hernia"
Terms of employment (7)	"Was sacked"
Social security (7)	"It was possible to retire"
Course of disease (6)	"Was again hospitalized"
Condition of the heart (4)	"20% pump stroke"
Motivation (3)	"Did not want to work anymore"
Signs or symptoms of disease (3)	"Too tired because of heart disease"
Work content (2)	"Too high work demands"
The ability to participate (2)	"Was sacked because of disfunctioning"
Mental capacity (1)	"Concentration problems"
Side effects of medication (1)	"Could not stand the medication"
Needed capacity in work (1)	"Problems with walking"
Age (1)	"Was too old"
Self-confidence (1)	"Felt insecure when working"

no return to work or for no return to work at pre-ACS working hours within 24 months after hospitalization (Table 3).

Discussion

In our study, we determined that most ACS patients returned to work after discharge from the hospital. However, many patients experienced factors that hindered their return to work and did not return to work at the pre-ACS level.

A strong point of our study compared to other studies [8-16] is our focus on the patients' perspective for returning to work and their ability to return to work at pre-ACS levels. We found that 36% of the patients did not return at all or returned to work at less than their pre-ACS working hours. These values are nearly twice as high as those reported by Bhattacharyya et al. [16]. The focus on the limited pre-ACS working levels may explain the differences found in our study.

Bias cannot be ruled out in our study because the participants suffered from ACS years before they were interviewed. Because ACS is a major life event that remains vividly present in a patient's memory, we think that the questions regarding the time period during which a patient suffered from ACS were an-

swnered accurately. However, factors that facilitated or hindered return to work might be forgotten over time.

The aim of our study was to assess the patients' opinions concerning their ability to return to work. Because we received answers that could classify patients as requiring patients to become vulnerable to the questions posed by the interview, such as "was no longer enthusiastic about work," we believe the answers received reflected the patients' actual views.

In our study, non-responders may have affected the results. Those who answered the phone responded. Those who did not respond changed from telephone provider and telephone number and could therefore not be reached. How this may have influenced the answers remains unknown.

In our study, we did not use diagnostic instruments to measure patient depression levels. However, our objective was not to diagnose patients during the interview but to elucidate the views of ACS patients about the hindering and facilitating factors for return to work. Addressing the views of these patients will facilitate future topics for communication between doctor and patient when discussing return to work.

Social, economic, and cultural factors can be important. In our study, we revealed some of the individual reasons for not returning to work. Repeating this kind of studies in other countries will reveal other and/or additional factors.

Contrary to prognostic studies on the return to work after heart events [8-16], our study shows factors that matter in the perspective of patients when the patients actually return to work, and with that, the meaning of prognostic factors for the return to work are provided. For instance, age is a known prognostic factor [9-13] that was only mentioned once in our study. This can be explained by the fact that older age is associated with early retirement or unemployment, factors that were mentioned more often in our study. Another example might be depression, which was barely mentioned in our study, but which is a known prognostic factor [16]. A lack of motivation to return to work was, however, mentioned 5 times and can be a symptom of depression.

The existence of co-morbidity has not been cited in many studies as a prognostic factor for ACS patients to return to work [17], but in our study and in other diseases, such as lower back pain [19], co-morbidity is an important issue. Because ACS is a major life event, there is a chance that co-morbidity will be overlooked on follow-up. In discussing the return to work, therefore, special attention should be paid to the possible co-morbidities.

An active lifestyle aids in the intervention during the course of an illness [20], and a return to work is part of an active lifestyle. A return to work can benefit the early intervention

of patients' perception of their illness [21]. Understanding the views of ACS patients in regards to returning to work might facilitate communication between physicians and patients and may stimulate return to work. Even if the patient is not motivated to return to work, physicians can encourage the patient to return to work by addressing the relevant factors and advocating an active life style.

In a *post hoc* log-rank-test analysis, NSTEMI and UA patients returned to work 2.7 months earlier than STEMI patients ($p=0.02$). Discussing the kind of ACS with the patient in relation to return to work should not be advocated because as this cannot influence.

Terms of employment and social security are embedded in social arrangements, and it seems that they fall outside the domain of the cardiologist. Discussing return to work in an early phase of the recovery process, however, might motivate patients to do so. This study shows that return to work is an issue for ACS patients, both in the short- and long-term following discharge from the hospital. Moreover, in gaining the patient's perspective, different factors can influence this process and its eventual outcome. Those different factors fall within the realms of different specialists, such as cardiologists, general practitioners, occupational health specialists, and insurance physicians who can share the responsibility to achieve returning to work in cardiac patients. Recognizing and discussing factors that are important for return to work, such as motivation, doctors' advice, and having a supportive work environment may encourage the patient to return to work. Future research is necessary to evaluate whether intervention based on these factors can truly lead to achieve this goal.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

References

- Canadian Cardiovascular Society; American Academy of Family Physicians; American College of Cardiology; American Heart Association, Antman EM, Hand M, Armstrong PW, Bates ER, Green LA, Halasyamani LK, Hochman JS, Krumholz HM, Lamas GA, Mullany CJ, Pearle DL, Sloan MA, Smith SC Jr, Anbe DT, Kushner FG, Ornato JP, Pearle DL, Sloan MA, Jacobs AK, Adams CD, Anderson JL, Buller CE, Creager MA, Ettinger SM, Halperin JL, Hunt SA, Lytle BW, Nishimura R, Page RL, Riegel B, Tarkington LG, Yancy CW. 2007 focused update of the ACC/AHA 2004 guidelines

- for the management of patients with ST-elevation myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2008;51:210-47.
2. Anderson JL, Adams CD, Antman EM, Bridges CR, Califf RM, Casey DE Jr, Chavey WE 2nd, Fesmire FM, Hochman JS, Levin TN, Lincoff AM, Peterson ED, Theroux P, Wenger NK, Wright RS, Smith SC Jr, Jacobs AK, Halperin JL, Hunt SA, Krumholz HM, Kushner FG, Lytle BW, Nishimura R, Ornato JP, Page RL, Riegel B; American College of Cardiology; American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines for the Management of Patients With Unstable Angina/Non ST-Elevation Myocardial Infarction); American College of Emergency Physicians; Society for Cardiovascular Angiography and Interventions; Society of Thoracic Surgeons; American Association of Cardiovascular and Pulmonary Rehabilitation; Society for Academic Emergency Medicine. ACC/AHA 2007 guidelines for the management of patients with unstable angina/non ST-elevation myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines for the Management of Patients With Unstable Angina/Non ST-Elevation Myocardial Infarction): developed in collaboration with the American College of Emergency Physicians, the Society for Cardiovascular Angiography and Interventions, and the Society of Thoracic Surgeons: endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation and the Society for Academic Emergency Medicine. *Circulation* 2007;116:e148-304.
 3. Fox KA, Steg PG, Eagle KA, Goodman SG, Anderson FA Jr, Granger CB, Flather MD, Budaj A, Quill A, Gore JM; GRACE Investigators. Decline in rates of death and heart failure in acute coronary syndromes, 1999-2006. *JAMA* 2007;297:1892-900.
 4. Poos MJJC, Eysink PED. Ranking of diseases and disorders in 15-to 65-year-olds [Internet]. Bilthoven (Netherlands): RIVM. 2011 [cited 2011 Dec 15]. Available from: <http://www.nationaalompas.nl/gezondheid-en-ziekte/ziekten-en-aandoeningen/rangordening-van-ziekten-en-aandoeningen-bij-15-tot-65-jarigen/>. Dutch.
 5. Vestling M, Tufvesson B, Iwarsson S. Indicators for return to work after stroke and the importance of work for subjective well-being and life satisfaction. *J Rehabil Med* 2003;35:127-31.
 6. Rasmussen DM, Elverdam B. The meaning of work and working life after cancer: an interview study. *Psychooncology* 2008;17:1232-8.
 7. Ilmarinen J. The ageing workforce--challenges for occupational health. *Occup Med (Lond)* 2006;56:362-4.
 8. Farkas J, Cerne K, Lainscak M, Keber I. Return to work after acute myocardial infarction--listen to your doctor! *Int J Cardiol* 2008;130:e14-6.
 9. Abbas AE, Brodie B, Stone G, Cox D, Berman A, Brewington S, Dixon S, O'Neill WW, Grines CL. Frequency of returning to work one and six months following percutaneous coronary intervention for acute myocardial infarction. *Am J Cardiol* 2004;94:1403-5.
 10. Nielsen FE, Sørensen HT, Skagen K. A prospective study found impaired left ventricular function predicted job retirement after acute myocardial infarction. *J Clin Epidemiol* 2004;57:837-42.
 11. Hämäläinen H, Mäki J, Virta L, Keskimäki I, Mähönen M, Moltchanov V, Salomaa V. Return to work after first myocardial infarction in 1991-1996 in Finland. *Eur J Public Health* 2004;14:350-3.
 12. Froom P, Cohen C, Rashcupkin J, Kristal-Boneh E, Melamed S, Benbassat J, Ribak J. Referral to occupational medicine clinics and resumption of employment after myocardial infarction. *J Occup Environ Med* 1999;41:943-7.
 13. Yuval R, Halon DA, Lewis BS. Perceived disability and lifestyle modification following hospitalization for non-ST elevation versus ST elevation acute coronary syndromes: the patients' point of view. *Eur J Cardiovasc Nurs* 2007;6:287-92.
 14. Petrie KJ, Weinman J, Sharpe N, Buckley J. Role of patients' view of their illness in predicting return to work and functioning after myocardial infarction: longitudinal study. *BMJ* 1996;312:1191-4.
 15. Boudrez H, De Backer G. Recent findings on return to work after an acute myocardial infarction or coronary artery bypass grafting. *Acta Cardiol* 2000;55:341-9.
 16. Bhattacharyya MR, Perkins-Porras L, Whitehead DL, Steptoe A. Psychological and clinical predictors of return to work after acute coronary syndrome. *Eur Heart J* 2007;28:160-5.
 17. Slebus FG, Kuijper PP, Willems HJ, Sluiter JK, Frings-Dresen MH. Prognostic factors for work ability in sicklisted employees with chronic diseases. *Occup Environ Med* 2007;64:814-9.
 18. WHO Collaborating Centre in the Netherlands. Dutch translation of the 'International Classification of Functioning, Disability and Health'. Houten (Netherlands): Bohn Stafleu Van Loghum; 2001. p. 19. Dutch.
 19. Pransky GS, Verma SK, Okurowski L, Webster B. Length of disability prognosis in acute occupational low back pain: development and testing of a practical approach. *Spine (Phila Pa 1976)* 2006;31:690-7.
 20. Chow CK, Jolly S, Rao-Melacini P, Fox KA, Anand SS, Yusuf S. Association of diet, exercise, and smoking modification with risk of early cardiovascular events after acute coronary syndromes. *Circulation* 2010;121:750-8.
 21. Petrie KJ, Cameron LD, Ellis CJ, Buick D, Weinman J. Changing illness perceptions after myocardial infarction: an early intervention randomized controlled trial. *Psychosom Med* 2002;64:580-6.